

## Doing it yourself

If you are going to work in the attic, follow these safety hints:

- Provide lots of light.
- Don't walk on the ceiling — you may fall through. Lay boards on joists to form a walkway.
- Wear a hardhat for protection from protruding roof nails and painful bumps.
- Wear coveralls, gloves and a breathing mask if you are working with glass or mineral fibre.
- Use goggles to help prevent eye irritation.
- Watch for electrical wiring. Do not disturb.
- Keep insulation at least three inches away from electrical equipment.

Use only CMHC approved material and don't block the ventilation from the eaves. If there is no vapor barrier, consider installing one, taking care that it is placed directly on the warm side of the wall or ceiling you are insulating. **Vapor barriers should not be placed over existing insulation.**

## Selecting a contractor

If you want a good job done, hire reliable contractors. Ask around, talk to friends, neighbors, business contacts or anyone else who has had insulation work done. Compile a list of three or four recommended contractors and have them give you estimates on the work you want done. Specify your needs in R-value, not in inches of insulation and ask for written estimates.

The length of time a contractor has been in business may be indicative of satisfactory service. Ask the contractor for names of previous clients and phone these people to ask if they were satisfied with the work. Check to see if the contractor will guarantee the work, for how long and under what terms.

Insist on a comprehensive contract which lists in detail the materials, R-value, warranty, price, date of completion and liability provisions.

## Paying the bill

To protect yourself from possible financial loss should the contractor go out of business and to help ensure the contractor finishes the job, keep the downpayment to a minimum (about 10 per cent).

Under The Mechanics' Lien Act, suppliers of goods or services not paid by the contractor or subcontractor can put a lien against your property. Therefore, the Act requires you to hold back 15 per cent of all

payments until 37 days after the work is completed, to protect yourself from liability. Even at the end of the 37 days, the amounts held back should not be paid until you have checked with the land registry office to make sure that no liens have been registered. If there are liens or if you are in doubt, see your lawyer.

## Have a look

When a contractor tells you the work is completed, have a look for yourself. If you contracted for a vapor barrier and eight inches of insulation in your attic, take a ruler and measure.

The federal government is offering a taxable grant on the cost of materials and labor used to reinsulate residential dwellings. For further details about the program or to find out if your home qualifies, phone the Canadian Home Insulation Program (CHIP) at one of the following numbers:  
1-800-268-1841 Toll free  
1-800-268-1818 Toll free  
1-416-365-6000 Toronto

## A case in point

Here's how one clever couple made sure they got just what they paid for and at a fair price. First, they measured the existing insulation and estimated it to be about R-7. To bring the attic to today's standards they needed to add R-21 for a total of R-28.

They did some comparison shopping and decided to use cellulose fibre, which has an R-value of 3.5 per inch. Therefore, they needed to add  $21 \div 3.5 = 6$  inches of insulation or 5 feet. Because one of the problems of blown insulation is that a careless contractor could put less material in inaccessible areas, our crafty consumers put a visible mark on joists six inches above the existing insulation in several areas of the attic.

Then they estimated the amount of material needed. The attic was  $20 \times 50$  feet = 1000 square feet. The volume of material needed, then was  $1000 \times 5 = 500$  cubic feet.

If one bag of insulating contained 10 cubic feet, our consumers needed  $500 \div 10 = 50$  bags of material. When they shopped for estimates they had a good idea about the cost of materials and were able to judge whether the estimate was fair.

After the work was done, they knew that the attic was covered evenly because the marks were no longer visible.

CA 2 ON  
CC  
-2 323

Government  
Publications

# Insulation: some basic facts.



As energy costs continue to spiral upward, more and more Canadians are looking for ways to stop heating bills from doing the same thing. Aside from turning down the thermostat and making sure the furnace is properly maintained, one of the best solutions is insulation.



Ontario

Ministry of  
Consumer and  
Commercial  
Relations

Studies have already provided dynamic proof of the energy-saving possibilities of insulation. What you save in fuel bills depends on the age and type of house, existing insulation and other factors. However, in reinsulated homes, savings to consumers have been as much as 25 per cent — sometimes more. That's good value for your dollar and homeowners have found that insulation quickly pays for itself with energy cost savings. After that, it's money in the bank.

So when the threat of snow is in the air and the farmer's almanac predicts another cold winter, do-it-yourselfers start sizing up the job while others start searching for a qualified contractor.

Anytime of the year is insulation time, and you may even get a better deal by having your insulation done in the spring or summer when the contractor has fewer projects. But, as with any major expenditure, investigate before you invest.

## The "R-value"

Thickness is not the only factor in determining the effectiveness of insulation. Materials that are good for insulating purposes are poor at conducting heat. To provide a standard of comparison for insulation materials, "R-value" is used to measure resistance to heat transfer. Tests are conducted on insulation materials to determine the degree to which they allow heat to pass through. The materials are then assigned an R-value according to effectiveness. The higher the R-value per inch of insulation, the more effective the material is in resisting the escape of heat.

## Recommended R-values

The Building Code Branch of the Ontario Ministry of Consumer and Commercial Relations recommends that you upgrade ceiling insulation to R-28, walls to R-12, basement walls to R-8 if solid masonry or concrete is used and to R-12 if wood frame construction is used. Cathedral ceilings, floors over unheated garages, unheated crawlspaces and overhangs to the outside should all be insulated to R-20.

## Types of insulation

Insulation has come a long way since the days when newspaper, sawdust or woodshavings were used. The following are common examples of modern insulation.

**Loose fill insulation:** These include glass fibre, cellulose fibre, mineral fibre and vermiculite. Some of these, such as glass and mineral fibre, may be blown as well as poured. The R-value per inch varies from 2.1 to 3.6 depending on the type and installation method.

**Batt or blanket insulation:** This is generally made from glass or mineral fibre. Batts are available in different widths and thicknesses. Batts with a moisture-resistant covering on one side to act as vapor barrier are also manufactured. The R-value per inch varies from 2.9 to 4.0 according to the type. The total R-value of the batt depends on the thickness.

**Rigid board insulation:** Included in this combustible synthetic grouping are extruded polystyrene, expanded polystyrene, phenolic foam board and polyurethane slabs. Though the R-value of these products is rated at 5.9 to 7.1 per inch, great care must be taken to ensure they are properly installed or they could create a severe fire hazard. Rigid board and foamed insulation must not be left exposed. They must be covered with an interior wall or ceiling finish acceptable to the Ontario Building Code, such as gypsum board, gypsum lath, fibreboard, plywood, particleboard or wall tile.

**Foamed insulation:** Polyurethane foam is relatively new to the house owner and must be installed by factory-trained mechanics having some knowledge of chemistry. Complex equipment and mixes are used and improper installation could cause damage to your house. The R-value of polyurethane foam ranges from 5.9 to 7.1 per inch and is a sprayed application. This material hardens almost immediately, is combustible and should be completely covered in the manner described in the Ontario Building Code.

*Another type of foam insulation is urea formaldehyde. The Federal Department of Health and Welfare in Ottawa has ordered a ban on the use of this material because of possible health hazards from formaldehyde fumes.*

When choosing the type of insulation most suitable to your needs, consider the following: water resistance, bacteria and vermin resistance, cost, ease of application and perhaps rigidity/flexibility.

Remember there are more than 150 brand names of insulation material acceptable to Canada Mortgage and Housing Corporation (CMHC) so you should be able to find one that suits your needs whether you or a contractor do the job.

## Vapor barriers and ventilation

Under winter conditions, the moist warm air inside heated spaces passes into the cold outer areas of the building and condenses in roof and wall assemblies. To control moisture migration, vapor barriers should be installed on the warm side of the ceiling or wall if possible. Adequate ventilation in attics and roof spaces help keep the insulation dry and retain its effectiveness, prevents mould growth, corrosion and rotting to wood members and reduce paint peeling problems.

Even houses that have a properly installed vapor barrier allow some leakage into the walls and attic. In all cases, to avoid problems, moisture must be allowed to escape. Outside walls generally allow vapor to escape freely as they are not airtight — but attics require ventilation. There should be one square foot of unobstructed ventilation opening for each 300 square feet of ceiling. These openings should be located to ensure good cross ventilation and one-half the required vents should be in the soffit with the other half on the roof near the ridge or in the gable end.

## Check your house

First, have a good look at the existing insulation in attic and basement and try to determine how the walls are insulated. Consider the following:

- type of existing insulation, if any,
  - total R-value of existing insulation,
  - condition of existing insulation,
  - vapor barriers, if any,
  - existing ventilation,
  - escape of heated air from areas around light socket, plumbing and wiring,
  - evidence of moisture (mould, rotten wood, water marks, general wetness),
  - amount of available space for adding additional insulation, and,
  - insulation inside or outside basement walls.
- Houses with a hatchway leading to the attic are the easiest to evaluate and reinsulate. Houses with little or no attic will require the services of an experienced contractor with proper equipment.